



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/581,193	06/01/2006	Tetsuya Murakami	1560-0459PUS1	3562
2292 7590 07/16/2009 BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747				
EXAMINER				
KNUTSON, JACOB D				
ART UNIT		PAPER NUMBER		
3611				
NOTIFICATION DATE		DELIVERY MODE		
07/16/2009		ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

### Office Action Summary

**Application No.**

10/581,193

**Applicant(s)**

MURAKAMI ET AL.

**Examiner**

JACOB KNUTSON

**Art Unit**

3611

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 March 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/ICE)
- Paper No(s)/Mail Date 5/27/09
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

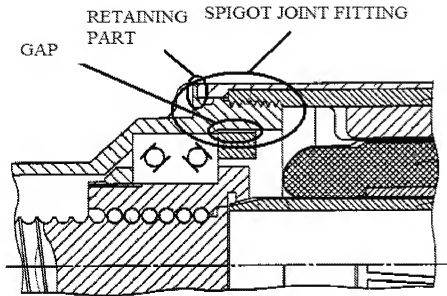
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims **1 – 5 are** rejected under 35 U.S.C. 102**(b)** as being anticipated by

**Kodaira (US 6,427,799 B1).**

For claim 1, Kodaira describes a vehicle steering apparatus comprising: a housing 2 for supporting coaxially to a steering shaft 2 (rack shaft) and a rotating cylinder 19 (nut section), said rotating cylinder being provided with a screw mechanism 3 constructed between said rotating cylinder and said steering shaft for moving an axial direction for the purpose of steering and being rotated by a transmission from a steering motor 1 (electric motor), said housing being constructed in a separated form consisting of first A and second housings B, said first and second housings being fit to each other by spigot-joint fitting on an outer side of a retaining part (shown in Fig. 2 and better identified in the drawing below) of a thrust bearing 4 (angular bearing) for thrust-supporting said rotating cylinder, wherein a gap 38 (caulking groove and better identified in the drawing below) is provided in a part that constitutes a part of the spigot-joint fitting part of said first and second housings and that is located on an outer side of a fixing nut 7 (yoke) screwed into said retaining part in order to apply a tightening force on said thrust bearing

from one side, and wherein said gap that constitutes a part overlaps, in an axial direction, with a screwing region said retaining part and said fixing nut screwed into said retaining part.



For claim 2, Kodaira describes a vehicle steering apparatus wherein said screw mechanism is a ball screw mechanism 3 constructed by engaging via a large number of balls 31, a screw groove formed in an outer periphery of said steering shaft with a screw groove formed in an inner periphery of said rotating cylinder as shown in Fig. 2.

For claim 3, Kodaira describes a vehicle steering apparatus further comprising: an escape stopping ring 32 (bearing holder ring) that contacts with an end face of said fixing nut from an opposite side of said thrust bearing.

For claim 4, Kodaira describes a vehicle steering apparatus wherein said thrust bearing is a twin angular contact ball bearing 4 having a common outer race tightened by said fixing nut.

For claim 5, Kodaira describes a vehicle steering apparatus wherein said thrust bearing is a shield bearing provided with a shield member on both sides of rolling elements as shown in Fig. 2.

*Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 6 and 7 rejected under 35 U.S.C. 103(a) as being unpatentable over

**Kodaira (US 6,427,799 B1)** as applied to claims **1** above, and further in view of **Cheng (US 6,155,376)**.

For claim 6, Kodaira does not describe a vehicle steering apparatus wherein said rotating cylinder has, in an outer periphery, a gear wheel that engages with a pinion of an output shaft of said steering motor. Cheng does describe a vehicle steering apparatus wherein said rotating cylinder **70** (ball nut assembly) has, in an outer periphery, a gear wheel **112** (first gear) that engages with a pinion **114** (second gear) of an output shaft **118** of said steering motor.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the gear wheel and pinion of Cheng with the steering assembly of Kodaira to allow for the ease of transferring force from the motor to the rotating cylinder.

For claim 7, Kodaira does not describe a vehicle steering apparatus wherein said gear wheel has resin gear teeth as stated in column 3, lines 52 - 59. Cheng does describe a vehicle steering apparatus wherein said gear wheel has resin gear teeth.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use resin gear teeth of Cheng with the steering assembly of Kodaira to allow for a transfer of force without slippage.

### ***Response to Arguments***

Applicant's arguments filed 3/10/09 have been fully considered but they are not persuasive. The applicant argues "said first and second housings being fit to each other by a spigot-joint fitting on an outer side of a retaining part of a thrust bearing for thrust-supporting said rotating cylinder" is not clearly. The drawing in Kodaira show a spigot-joint fitting type which is better explained in claim 1. Applicant argues "a screw mechanism constructed between said rotating cylinder and said steering shaft". The screw mechanism is corrected now with the rotating cylinder being element 19 (nut section). Applicant argues "a fixing nut screwed into said retaining part in order to apply a tightening force on said thrust bearing from one side." The fixing nut has been changed to element 7 (yoke). Applicant argues "a thrust bearing for thrust-supporting said rotating cylinder" is impossible because the nut section 19 and the angular bearing 4 are combined to form a unitary member. It has changed due to the fixing nut now being element 7 (yoke).

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jacob Knutson whose telephone number is 571-270-5576. The examiner can normally be reached on Monday to Thursday, 6:00 AM - 4:30 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leslie Morris can be reached on 571-272-6651. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JK/

June 30, 2009

/Christopher P Ellis/

Supervisory Patent Examiner, Art Unit 3618